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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,209	09/25/2002	Larry L. Longden	73591	8169

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Gregory J. Koerner
Redwood Patent Law
1291 East Hillsdale Boulevard
Suite 205
Foster City, CA 94404

EXAMINER

FARAHANI, DANA

ART UNIT PAPER NUMBER

2891

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,209

Applicant(s)

LONGDEN ET AL.

Examiner

Dana Farahani

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 19-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 19-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Strobel et al., hereinafter Strobel (US Patent 5,635,754), previously cited.

Regarding claims 1, Strobel discloses in figure 4D, a radiation shielding integrated circuit device comprising:

a x-ray shielding layer, the layer comprising layers 512 and 542 for shielding an electronic circuit device from receiving an amount of x-ray greater than the total dose tolerance of the electronic circuit device;

a base 510 coupled to the x-ray shielding layer;

a radiation shielding top 572 coupled to the base;

a radiation shielding bottom 512 coupled to the base; and

the electronic circuit device coupled to the x-ray shielding layer, the x-ray shielding layer obstructing a line of sight path to the electronic circuit device from an external x-ray source;

wherein the electronic circuit device is shielded from receiving an amount of radiation greater than a total dose tolerance of the electronic circuit device.

Note that also the reference does not mention x-rays, the high-z material (a material with the atomic number 50 or above) used in the figure is for example tantalum (see column 7, line

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64) which blocks x-rays, as this material is one of the materials applicants has mentioned that could be used to form the shielding layers (See paragraph 35).

Regarding claim 2, the radiation shielding top and the x-ray shielding layer are positioned such that there is no line of sight angle at which the x-rays could reach the integrated circuit device.

Regarding claims 3 and 4, the x-ray shielding layer and the radiation shielding top have first and second thicknesses, respectively.

Regarding claim 6, the radiation shielding top is a high Z material, as discussed above.

Regarding claim 7, the radiation shielding top could be an alloy of a high Z material and a low Z material, such as copper (see column 7, lines 62-65).

Regarding claim 8, a spacing ring 514 coupled to the radiation shielding top and to the base.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strobel.

Regarding claim 5, Strobel substantially discloses the claimed invention, as discussed above, except for expressly disclosing the second thickness is greater than the first thickness.

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Strobel implies that the size and dimension of the top 572 can be adjusted (see column 7, lines 59 and 60). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the thickness of the top shielding layer because of the environment in which the package is used. See *In re Rose*, 105 USPQ 237 (CCPA 1955) for the proposition that change in size of a component is considered to be within the level of ordinary skill in the art.

Regarding claims 9 and 10, Strobel substantially discloses the claimed invention, as discussed above, except for expressly disclosing the space ring being a high (or low) Z material. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a high (or low) Z material, which the top shielding layer is made from, to make the space ring, since the material would have been readily available in the chip manufacturing environment. See *in re Leshin*, 125 USPQ 416 for the proposition that is has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability of the intended use.

5. Claims 19-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strobel as applied to claim 1-10 above, and further in view of Ishio et al., hereinafter Ishio (US Patent 6,118,184), previously cited.

Regarding claims 19, 20, and 22-26, Strobel substantially discloses the limitations in the claims, as discussed above, except for a second circuit die with corresponding shielding layers.

Ishio discloses in figure 2, two chips 1a and 1b are assembled in a semiconductor device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the chip of the Strobel's structure in a device along with other chips and their

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corresponding shielding layers in order to make the structure usable in a device that use a plurality of chips, while benefiting from the shielding properties associated from the structure.

Regarding claim 21, the vertical portion of the bottom shielding layer 512 is the second space ring.

Response to Arguments

6. Applicants' arguments filed 5/23/05 have been fully considered but they are not persuasive.

Applicants argue that the newly added limitation, namely, "localized external" x-ray source is not disclosed in the primary reference. The Office maintains that the shield system of the primary reference is readable on this limitation, since it is readily apparent, and also as admitted by the applicants (see the remark section filed by applicants, page 9, lines 2 and 3), the shield system of the Strobel reference protects the chip inside the system from any radiation.

Applicants argue that shielding layer mentioned in paragraph 35 of the application, and relied on by the examiner to show that tantalum shields against x-ray, is not part of the applicants' "x-ray" shielding layer, rather merely a shielding layer. From reviewing paragraph 35 and the proceeding parts of the application, one of ordinary skill in the art infer that the top and the bottom shielding layers protect against x-ray. Nevertheless, a new reference, Luhta et al. (US Patent 6,778,637), which is merely cited for applicants' benefit, and is not relied upon in any grounds of rejection in this Office Action, is cited to show that tantalum in fact does shield against x-ray radiation (see column 6, line 46). Therefore, the shield layer of the Strobel reference inherently shields against x-ray radiation.

Regarding applicants' argument that the examiner has not produced a prima facie case of obviousness, with regard to the second thickness and the material used as the space rings of the Strobel reference, as the above mentioned case laws make it clear, such modifications involve routine skill in the art, and the motivation as to why one of ordinary skill in the art would want to make the modifications regarding the second thickness and the suitable material for the space rings are also discussed in the above rejections.

With regard to applicants' argument that the limitations in claim 5, namely, "...because said radiation shielding top is designed to attenuate said radiation and said x-ray shielding layer is designed to attenuate said x-rays" such limitations are functional limitations that inherently are disclosed in the Strobel structure (see the rejections above).

In response to applicants' arguments against the references individually (that the Ishio reference nowhere discusses or mentions x-rays), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that the examiner's conclusion of obviousness of the two references is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Farahani



B. WILLIAM BAUMEISTER
SUPERVISORY PATENT EXAMINER